11. The deoxygenator of claim 8 wherein the thickness of the polytetraflouroethylene membrane is less than about 0.002 inch.

12. The deoxygenator of claim 3 wherein the membrane filter is a permeable membrane which operates by a solution-diffusion mechanism.

13. The deoxygenator of claim 12 wherein the membrane filter comprises a silicone-rubber permeable membrane.

14. The deoxygenator of claim 12 wherein the membrane filter is disposed on the surface of a porous substrate.

15. The deoxygenator of claim 3 wherein the membrane filter is a porous membrane that operates by allowing dissolved oxygen to diffuse through angstrom-size pores.

16. The deoxygenator of claim 15 wherein the membrane filter comprises a layer of zeolite particles.

17. The deoxygenator of claim 16 wherein the membrane filter is disposed on the surface of a porous substrate.

18. The deoxygenator of claim 3 wherein the fuel system includes a deoxygenation chamber containing the membrane filter, the membrane filter being structured and positioned in the deoxygenation chamber to provide a fuel region and a removed oxygen region respectively on opposite sides of the membrane filter.

19. The deoxygenator of claim 18 including means for controlling the difference of partial pressures of oxygen across the membrane, thereby to regulate the driving force for moving oxygen through the membrane.

20. The deoxygenator of claim 19 wherein said means for controlling the difference of partial pressures of oxygen comprise at least one of a means for regulating the temperature of the fuel in the fuel region of the deoxygenation chamber and a means for regulating the partial pressure of oxygen in the removed oxygen region of the deoxygenation chamber.

21. The deoxygenator of claim 18 wherein the fuel system includes a fuel storage reservoir, and further including conduit means operatively connected between the removed oxygen region of the deoxygenation chamber and the fuel storage reservoir for returning removed oxygen to the fuel storage reservoir.

22. The deoxygenator of claim 3 wherein the energy conversion device is an aircraft gas turbine engine and the fuel is a hydrocarbon.

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